A PROPOSAL FOR SOLID WASTE MANAGEMENT

– Environmental Protection that Benefits the Poor –

Submitted by Hand in Hand

HAND IN HAND

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FOREWORD

Hand in Hand is dedicated to the development and empowerment of disadvantaged groups, and especially rural and tribal families, through grassroots action, research, and education. We see the status of the local natural environment as key in the development process. Since poor and marginalised people lack the resources needed to reduce the negative effects of a degraded environment, a damaged natural environment will hit the most vulnerable groups of society the hardest. At the same time, people living with scarce resources are usually directly dependent on their close natural environment for their daily survival.

In this light, Hand in Hand has compiled a proposal for starting up a decentralised solid waste management (SWM) scheme in one panchayat in Kancheepuram District, Tamil Nadu, India. The project will have a two-sided effect: it will improve the local environment, and, at the same time, offer continuous employment to individuals from socially and economically disadvantaged groups.

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ABBREVIATIONS AND ACRONYMS

CBO	community based organisation
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
GDP	gross domestic product
IEC	Information, Education, and Communication
INR	Indian Rupee
NGO	nongovernmental organisation
NWMC	National Waste Management Council
OBCs	Other Backward Classes
PIL	Public Interest Litigation
PPP	purchasing power parity
PRA	Participatory Rural Appraisal
RWA	Resident Welfare Association
SCs	Scheduled Castes
SHG	Self Help Group
STs	Scheduled Tribes
SWM	solid waste management
ULB	Urban Local Body

1. BACKGROUND

Introduction

During the previous two-and-a-half decades, India's economic growth has been among the most rapid in the world. The last ten years have seen a six percent gross domestic product (GDP) growth per annum, and, measured in purchasing power parity (PPP), India represents the fourth largest economy in the world today. The economic progress shows no sign of slowing down; the target set in the Tenth Five Year Plan (2002-07) is an eight percent annual GDP growth. As the result of recent year's economic development, one percent of all Indians are estimated to cross the poverty line every year and today's middle class has reached beyond 250 million people.

However, in spite of the unprecedented economic expansion, more than two-thirds of all Indians are still impoverished, surviving on less than two dollars per day. Hence, although absolute poverty has been cut by more than half, illiteracy has reduced dramatically, and many health indicators have improved, the vast inequalities are still persistent. Given that approximately one quarter of all poor people in the world live in India, the coming years' development in that country will directly affect how well the world succeeds in attaining the UN Millennium Goals for 2015.

India is undoubtedly a dynamic, diverse, and complex society. The caste system, although unofficially abandoned, is prevailing, and many groups remain poor, disadvantaged, and secluded from the economic and political scenes. Another obvious structural problem is related to gender; Indian women are, e.g., less in numbers, they have a poorer access to healthcare and education compared to men, they are not engaged in economic activities in the same extent as men, and they are underrepresented in most democratic institutions.

The increasing industrialisation and fast growth does not only pose problems related to the allocation of resources and powers, but also severely challenges the natural environment. Environmental degradation such as contaminated water, sinking groundwater levels, unhealthy soils, and polluted air has become a harsh reality in many parts of India.

Noteworthy, a damaged local environment hits the most vulnerable groups of society the hardest. Poor and marginalised people lack the resources needed to reduce the negative effects of a degraded environment. At the same time, they are usually directly dependent on their close natural environment for their daily survival.

One result of a rapid urbanisation, a slowly reducing gap between urban and rural, changing consumption patterns, and a growing population is the problem of waste. Although the average Indian only generates around half a kilo of solid waste per day, the volume is huge. Given the current developments, the generation of municipal solid waste in India in

the year 2047 has been projected to exceed 260 million tons – a number more than five times the present levels.[1] While the quantity of solid waste generated by society is increasing, the composition of solid waste is becoming more and more diversified. Thirty years ago, the composition of solid waste generated by the Indian farmer was characterised by one-fifth non-biodegradable waste and four-fifths biodegradable waste. At present, this ratio is about to reverse; today, a mere 40 percent is biodegradable while 60 percent is non-biodegradable. At the same time, many households do not recycle their waste, but, instead, tend to dispose it outside their homes or on the streets.

In October 2000, the Ministry of Environment and Forests notified the Municipal Solid Wastes (Management and Handling) Rules 2000, which lay down the procedures and guidelines for collection, segregation, storage, transportation, processing, and disposal of municipal solid waste. The rules require that all cities should set up suitable waste treatment and disposal facilities. They also specify standards for compost quality, leachate control and management, and closure of landfill sites.

However, although it is the duty of the Urban Local Bodies (ULBs) to address the issue of SWM, tight budgets, inefficient organisation, etcetera, has rendered a situation that has little hope for alleviation in the near future. Instead, garbage is burnt or dumped; either producing hazardous smoke or leeching into the soil and contaminating both soil and water.

The Proposal

This proposal aims at starting up a decentralised solid waste management (SWM) scheme in one panchayat in Kancheepuram District, Tamil Nadu, India, thereby improving the local environment and offering continuous employment to individuals from socially and economically disadvantaged groups. After an initial period of 24 months, the project will be handed over to the panchayat.

India's Tenth Five Year Plan

Some of the most important development goals highlighted in India's Tenth Five Year Plan (2002-07) are as follows:

- An eight percent annual GDP growth
- Reduction of poverty by five percentage points by 2007 and by 15 percentage points by 2012
- Providing gainful and high-quality employment to the labour force
- All children to complete five years of schooling by 2007

[1] Singhal and Pandey (June 2001).

- Reduction in gender gaps in literacy and wage rates by at least 50 percent by 2007
- Reduction in the decadal rate of population growth between 2001 and 2011 to 16.2 percent;
- Increase in literacy rates to 75 percent
- Reduction of infant mortality rate to 45 per 1000 live births by 2007 and to 28 by 2012
- Reduction of maternal mortality ratio to two per 1000 live births by 2007 and to one by 2012
- Increase in forest and tree cover to 25 per cent by 2007 and 33 per cent by 2012
- All villages to have sustained access to potable drinking water
- Cleaning of all major polluted rivers by 2007 and other notified stretches by 2012

Municipal Solid Waste Management

Solid waste management (SWM) is far from a new phenomenon in India; the Ministry of Food and Agriculture offered loans to ULBs for SWM initiatives as far back as in the 1960s. It is, however, only in the last few years that the waste issue has moved up on the country's development agenda and received substantial interest. In the country's Tenth Five Year Plan (2002-07), the issue of SWM is addressed in several chapters and from different angles. First, the plan states that comprehensive project preparations should be undertaken for all towns and cities for both solid and liquid waste treatment and recycling. In relation to this, land should be identified and acquired. It also stresses waste segregation at source into non-biodegradable and biodegradable waste.

Another priority area is to promote organic farming and the utilisation of organic compost; the plan encourages for instance the conversion of municipal solid waste into vermi-compost. The organic manure can thereafter supplement the use of chemical fertilisers in crop production. Vermi-compost improves the physical condition of the soil and increases the level of micronutrients. The plan furthers stresses the growing demand for organically produced food, while positioning India as a potentially competitive organic food supplier on the world market.

When addressing Civic Amenities in Urban Areas (vol. 2, chap. 6.2), one of the priority action areas is to assess the demand for SWM services and the "willingness to pay" by communities, since many municipal bodies suffer from inadequate resources. The idea is that such assessment will give an indication on the adequate pricing for the services as well as clarify the scope for adopting full cost recovery policies.

The importance of fiscal concessions and subsidies is also given notice; transport vehicles for carrying solid waste may be exempted from sales tax and other duties, and the organic manure produced in compost plants should be granted some subsidy. Another priority area is the identification and development of less capital-intensive intermediate SWM technologies, and the implementation of cost effective technologies that are not depend-

ent on an assured power supply. Finally, as transportation adds to the cost of handling waste, the plan encourages decentralised SWM.

The Central Public Health and Environmental Engineering Organisation (CPHEEO) has estimated that INR 23,226,000,000 is needed if the SWM activities stipulated in the Tenth Five Year Plan (2002-07) are to be implemented.[2]

Empowerment of Women and other Disadvantaged Groups

The Tenth Five Year Plan (2002-07) devotes several chapters to the empowerment of women, and in particular women from socially and economically marginalised groups, as well as people from other disadvantaged groups, i.e. Scheduled Castes (SCs), Other Backward Classes (OBCs), Scheduled Tribes (STs), and people living with disabilities (see e.g. vol. 2, chap. 2.11, 4.1, 4.2, and 4.3). These groups continue to be on the priority list as they still lag behind the rest of society socially, economically, and politically. At the same time, they make up a large part of the total population.

During the course of India's ten five year plans, the Indian government has formulated and initiated numerous affirmative action programmes, empowerment plans, equality policies, and self-/employment strategies targeting these groups. Yet, a lot still needs to be done before disadvantaged groups such as women, SCs, OBCs, STs, and people living with disabilities have actual opportunities to partake in society and the de-jure equality becomes a de-facto one.

[2] India's Tenth Five Year Plan (2002-07).

2. STAKEHOLDERS

Community participation in SWM is the key to a sustainable and integrated project. The aim is to get as many local actors as possible to participate and actively contribute to the project. Most importantly, we want to create a feeling of ownership for the project among the citizens, whose waste is managed and whose local environment is improved by the project.

A SWM project will be implemented in one panchayat in Kancheepuram District, Tamil Nadu India. The panchayat will have a population of 5,000 people, or approximately 1,000 households.

Employees

Hundreds of thousands of people in India find livelihood opportunities in the area of waste, the "rag-pickers" (the kabadiwalas in Hindi). A SWM project must hence be understood in this informal yet organised setting.[3] In order not to bypass these individuals, they will be prioritised in the employment process and offered continuous employment in the projects.

The projects will employ 15 people, among whom 50 percent will come from Self Help Groups (SHGs). Our aim is here to particularly engage and employ women, and especially women from socially and economically marginalised groups, as well as widows, deserted women, women living with disabilities, and other disadvantaged women. Besides women, we will target men from SCs, OBCs, STs, as well as men living with disabilities. We will, as far as possible, hire people from the concerned community.

As to the composition of women and men, half of the newly formed Self Help Groups will consist of male members solely, and the other half will consist of female members solely. The core team will also be balanced as regards gender.

The Public

It is vital that the public – i.e. ordinary citizens as well as private and public institutions – whose waste is managed and whose environment is improved, is actively involved in the project. An important step to motivate and engage the public is via continuous public awareness campaigns based on an Information, Education, and Communication (IEC)

[3] Gupta (April 2004).

strategy. In addition, a special feeling of ownership vis-à-vis the project will be created as each household will contribute to the project with a monthly fee of INR 15-25.

One thousand households will take part, totalling in around 5,000 people.

Volunteers

Motivated individuals such as headmasters, doctors, religious leaders, and etcetera, from the concerned communities will be engaged as volunteers and help convey the message to the public as well as function as role-model citizens.

NGOs, CBOs, and Local Associations

Local nongovernmental organisations (NGOs), community based organisations (CBOs), and associations such as Resident Welfare Associations (RWAs) and Women's Associations will be offered training in SWM.

Youth Groups and Eco-Clubs

Youth groups and eco-clubs at schools will be engaged in the project via continuous school intervention programmes.

Panchayat

After the project period is over (24 months), the project – including labour and infrastructure – will be handed over to the panchayat. In order to prepare the panchayat, a handover phase of six months will end the project. All project costs will thereon be met partly by the community fund and partly by the panchayat.

Private Corporations

We will seek the partnership of local and foreign companies for financial contributions as well as donations of machineries for scientific recycling of inorganic wastes. Private corporations will also be able to sponsor the project and receive marketing in return.

3. PROBLEM ANALYSIS

The Indian Waste Situation

According to the Central Pollution Control Board (CPCB), the average Indian generates about 490 grams of waste per day. Although the per capita waste is low compared to western countries, the volume is huge. The generation of solid waste in Indian cities has been estimated to grow with 1.3 percent annually. The expected generation of waste in 2025 will therefore be around 700 grams per capita per day. Considering that the urban population of India is expected to grow to 45 percent from the prevailing 28 percent, the magnitude of the problem is likely to grow even larger unless immediate steps are taken.[4]

While the quantity of solid waste generated by society is increasing, the composition of waste is becoming more and more diversified, with increasing use of packaging materials made of both paper and plastic. Thirty years ago, the composition of solid waste generated by the Indian farmer was characterised by one-fifth non-biodegradable waste and four-fifths biodegradable waste. At present, this ratio is about to reverse; today, a mere 40 percent of all solid waste is biodegradable while 60 percent is non-biodegradable.

Poor Compliance

In October 2000, the Ministry of Environment and Forests notified the Municipal Solid Wastes (Management and Handling) Rules, which lay down the procedures and guidelines for collection, segregation, storage, transportation, processing, and disposal of municipal solid waste. The rules require all cities to set up suitable waste treatment and disposal facilities by 31 December 2001. They also specify standards for compost quality, leachate control and management, and closure of landfill sites. In 2000, CPHEEO complemented the rules with a Manual on Municipal Solid Waste Management. Due to poor implementation of the rules, the Supreme Court has directed that a proper mechanism be developed to monitor the progress in the implementation process; all municipal authorities have been obliged to submit regular progress reports to the CPCB.[5]

As stated in the Indian constitution, it is the primary responsibility of all state governments to ensure that appropriate SWM practices are implemented. The role of the central government is mainly to formulate policy guidelines, provide technical assistance, and assist in capacity building. However, although SWM is defined as a state affair, it is the municipalities and the ULBs that are directly responsible for performing the activities.

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[4] *Management of Solid Waste in Indian Cities*.
[5] *Management of Solid Waste in Indian Cities*.

The Municipal Solid Wastes (Management and Handling) Rules 2000 are not the only policy documents targeting the issue. In addition, as part of the National Environment Policy 2006, the action plan for soil pollution comprises strengthening the capacities of ULBs for segregation, recycling, and reuse of municipal solid wastes, and setting up and operating sanitary landfills, in particular through competitive outsourcing of SWM services.[6]

During the last years, a few comprehensive studies and reports have been compiled assessing the Indian solid waste situation from various angles. Some of the most substantial contributions are for instance the draft report for the 12th Finance Commission of India, entitled Management of Solid Waste in Indian Cities, as well as CPHEEO's Solid Waste Management Manual. According to reports such as these, the municipal programmes are in extremely poor condition, if they exist at all; in the preface of the Solid Waste Management Manual (2000), the author even refers to the situation as "pathetic". Unless rigorous efforts are made to improve the flow of resources to the programmes, the problems will only aggravate further and continue to cause environmental degradation and human health problems.[7]

Out of the total solid waste generated, 50 to 90 percent is colleted, while 94 percent is disposed unscientifically. Only 70 percent of the cities have adequate waste transportation facilities. The waste is often left unattended at the disposal sites, creating a health hazard. Plastic contents are for instance amassed by private individuals that sell them to small factories with no adequate technology, leading to the emission of toxic fumes. Urban slums are likely to be the ones most neglected. Hence, despite concerted efforts by policy makers to create a legal framework around the issue, solid waste in India is still in need of massive attention and acute management.[8]

Several reasons are given in order to explain the poor status of the municipal SWM programmes. A lack of financial and human resources as well as organisational inefficiency within municipal bodies are said to cause a lot of trouble. Transportation arrangements are generally inadequate due to the unavailability of proper vehicles as well as the low productivity of the personnel. There are also policy gaps that need to be addressed (e.g. to desist people from throwing garbage in public areas). In addition, the ULBs find it hard to raise resources to acquire suitable land, and they often lack the technical capability to design a proper sanitary landfill facility.[9]

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[6] *National Environment Policy 2006* (18 May 2006).

[7] India's Tenth Five Year Plan (2002-07); *Management of Solid Waste in Indian Cities*; *Solid Waste Management Manual* (2000).

[8] *Management of Solid Waste in Indian Cities*.

[9] *Management of Solid Waste in Indian Cities*.

Environmental Degradation, Human Health, and Waste

Improper handling of solid waste and indiscriminate disposal in open spaces, road margins, tank beds, and etcetera, give rise to numerous potential risks to the environment and to human health. Direct health risks mainly concern those working in the field without using proper gloves, uniforms, and etcetera; a high percentage of waste workers and individuals who live near or on disposal sites are infected with gastrointestinal parasites, worms, and related organisms.[10]

For the public, the main risks to health are indirect and related to poor water, land, and air quality. In addition, infrequent collection of waste provides an attractive breeding ground for flies and rats.[11]

The most obvious environmental damage caused by solid waste is aesthetic, i.e. waste that litter public areas is ugly and smelly. A more serious risk is the transfer of pollution to ground water and land as well as the pollution of air from improper burning of waste. Many waste activities generate greenhouse gases; e.g., landfills generate methane and refuse fleets are significant sources of carbon dioxide and nitrous oxide. Open burning dumpsites produce volatilised heavy metals (e.g. mercury and lead), dioxins, and furan. Leachate from unlined and uncovered dumpsites contaminates surface and ground waters.[12]

A damaged local environment will first hit the most vulnerable groups of society, those who lack the resources needed to reduce the negative effects of a degraded environment. In addition, people living under poor circumstances are also directly dependent on their close natural environment for their daily survival.

Non-Cyclical Perspective

A fundamental problem is the linear, non-cyclical, way of treating and relating to waste in India, both on paper and in practice. Waste is not seen as a resource that can be refined (e.g. as nutritious compost manure or energy) or recycled (e.g. into new paper and plastic), and thereby generate wealth. Instead, it is often treated as the evil leftover that needs to be eliminated.

Moreover, waste is rarely discussed as part of a cycle of production, consumption, and recovery, nor is it assessed in relation to environmental sustainability. On the contrary,

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[10] *Solid Waste Management Manual* (2000).
[11] *Solid Waste Management Manual* (2000).
[12] Cointreau (February 2006).

SWM is seen as a linear process of collection and disposal and the preceding actions of production and consumption are seldom reflected upon.[13]

Cultural Taboos and Social Stigma

Another problem related to waste in India, as in many societies, is that it is considered dirty and filthy, and those dealing with it are perceived as inferior, second-class citizens. Traditionally, people working with waste in India – popularly know as rag pickers – usually belong to the "untouchables" (the Dalits); e.g., the raddiwallhas collect or buy waste and the kamatees/kamatans sweep the streets. Hence, the prevailing, informal, waste system also affects how people view waste.[14]

The waste workers live and work under extensive health risks, and suffer severe exploitation and deprivation. Possible health hazards include raised levels of infant mortality, hand and leg injuries, intestinal and respiratory infections, eye infections, lower back pain, malnutrition, skin disorders, and exposure to hazardous waste.[15]

Women and other Disadvantaged Groups

Various socio-economic indices such as representation in workforce, type of work, income, literacy, health, and mortality reveal that woman are one of the most disadvantaged population groups. Advances made in social legislation and the relative ease with which Indian women secured legal and political equality, entered professions, and occupied positions of power, have led to a myth that India has a high degree of gender equality. In reality, five decades after independence, the position of the Indian woman has worsened considerably in every sphere, with declining sex ratios, declining economic participation, and growing gaps in life expectancy between men and women.[16]

Although the Indian constitution guarantees formal equality, the present status of women is characterised by marginalisation and a lack of resources. To exemplify, crucial decision making powers within the household are still held by men, there is a marked preference for male children, there is a gender disparity in food intake levels, the dowry system is prevailing, and widows and disabled women are very bad off.[17]

India is an indeed diverse society and women are far from the only group suffering from social and economic marginalisation and structural discrimination; SCs, OBCs, STs, and

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[13] Gupta (April 2004).
[14] Snel (1999).
[15] *Solid Waste Management Manual* (2000).
[16] K Menon-Sen and SAK Kumar (2001).
[17] K Menon-Sen and SAK Kumar (2001).

people living with disabilities have also been defined as especially disadvantaged in to the Tenth Five Year Plan (2002-07).

4. OBJECTIVES

Environmental Protection that Benefits the Poor

The SWM project strives for maximum waste recovery through composting, recycling, and reuse, and aims at zero waste to be disposed onto dump-yards and landfills. The long-term objective is thus to reduce the environmental degradation caused by solid waste.

By using composting methods to manage the biodegradable waste, we are able to:

- Minimise waste that needs to be disposed in centralised landfills, thus extending existing landfill capacity;
- Reduce the environmental impact of disposal sites as the bio-degradable waste fraction largely is to blame for the polluting leachate and the methane problems;
- Benefit the soil by using organic compost instead of chemical fertilisers.

Furthermore, decentralised composting schemes as suggested in this proposal have advantages to centralised schemes, as they

- Divert biodegradable waste from the municipal waste stream, thus reducing transportation costs and the environmental costs;
- Enhance environmental awareness in the community;
- Create employment in the community;
- Ensures sustainability of the project at the local level;
- Are more flexible options for SWM since they can adapt rapidly to changes in user needs;
- Are close to the residents, allowing close quality surveillance of the waste processing services and products;
- Are mostly small-scale, based on labour-intensive technology, and better adapted to the local socio-economic situation;
- Decrease the problems caused by malfunctioning municipal services when decentralised composting is combined with primary collection services.[18]

A properly run decentralised SWM project will contribute to a cleaner local environment, maintaining pure surface and ground water, healthy soils, and clean air. Noteworthy, a clean local environment will immediately benefit the most vulnerable groups of society whose livelihoods often depend on the natural resources available locally.

[18] *Management of Solid Waste in Indian Cities*.

Empowerment of Women and other Disadvantaged Groups

The project aims at empowering women, and in particular women from socially and economically disadvantaged groups, as well as individuals from SCs, OBCs, and STs, and people living with disabilities, by offering them continuous employment and a guaranteed salary. In order not to disregard those already involved in SWM in the informal sector (the so-called rag pickers), they will get first priority in the employment process.

There will also be opportunities for the start-up of micro-enterprises in recycling, e.g. recycling of paper, Tetra Pak cartons, Pet bottles, and etcetera. Hand in Hand will here use existing organisational capacities to train Self Help Group members and assist them in credit access and market tie-ups. Already established community based neighbourhood composts will be supported and promoted.

The importance of economic empowerment should not be understated. As the individual is able to contribute to the household income, his/her self-esteem is regained and the decision-making powers are altered. Economic empowerment is hence a prerequisite for actual equality. Good working conditions, continuous training, and the adoption of scientific and professional ways of handling waste will minimise health risks and other occupational hazards that are common in the informal settings.

Raised Awareness and Changing Perceptions

In order to make long-term, sustainable changes, people at the grassroots level must feel ownership of and commitment to all of the project interventions. An important aspect in order to change norms, attitudes, and behaviours is naturally to raise the public's level of awareness, inform, and trigger debates about issues such as production and consumption patterns, actor responsibilities, sustainable economic growth, and so forth. It is central that waste is understood and discussed as part of a cyclical process of production, consumption, and recovery.

Another project objective is to remove the social stigmas and taboos surrounding waste; instead of perceiving waste as something dirty, it should be seen as a lucrative resource from which one could make a living. By offering competitive salaries, good working conditions, professional uniforms, and etcetera, to the employees, we hope to change negative perceptions surrounding waste.

Measurable in Numbers

- 15 fulltime employment opportunities;
- One decentralised SWM project covering 5,000 people, or 1,000 households;

- 400 grams of biodegradable waste per household per day to be composted into organic manure;
- 600 grams of non-biodegradable waste per household per day to be recycled or reused.

5. RISKS AND EXTERNAL FACTORS

As with most projects, risks and external factors may influence the project to a certain degree. One such risk is linked to the hand-over of the project to the panchayat. There is a risk of the panchayat not prioritising the project after it has been handed over to them. We hope to eliminate this risk by creating a solid support for the project among various community actors, e.g. the public, private corporations, school pupils, volunteers, employees, and etcetera, and thereby increasing the expectations on the panchayat administration.

In addition, during the six-month hand-over phase, panchayat will be sensitised to SWM and thoroughly introduced to the project. Extensive technical support and training will be given to municipalities by Hand in Hand and the core team.

As projects are handed over to the panchayat, they also run the risk of becoming politicised and the Self Help Group members risk being used to gain political sympathies in different groups. It is important that all parties are aware of this risk and that it is reduced as much as possible through community participation, transparency, and local ownership.

The household fee of INR 15-25 per month is another obvious risk factor. Since government budgets for SWM systems generally are covered by the overall property tax, there will most probably be an initial resistance towards the monthly fee to be paid by the households. It will take some time to convince the public of the project benefits. Hence, in order to get the project rolling, the first months of waste collection will be free of charge.

Finally, SWM projects in India run the risk of bypassing and disregarding those people who are already engaged in waste management in the informal sector (i.e. the so-called rag pickers). We are fully aware of this risk and will do our uttermost to firstly identify these individuals and thereafter motivate them to join the SWM project as fulltime employees.

6. PROJECT ORGANISATION AND IMPLEMENTATION

Hand in Hand

Hand in Hand is a Public Charitable Trust registered in the year 2003 with an initial focus on education and the elimination of child labour. With time, Hand in Hand has adopted a holistic approach in order to tackle problems related to poverty at large in rural areas. Hand in Hand is currently involved in implementing an Integrated Community Development Project in which five interconnected and interdependent sectors are developed:

1. Microfinance and Self Help Groups for enterprise and job creation
2. Child labour elimination and school programmes
3. Citizen centres and strengthening of grass root level democracy
4. Improved health and hygiene via medical camps and awareness campaigns
5. Environmental protection via watershed projects and SWM

All of our activities are guided by the following principles:

- Local ownership – The Participatory Rural Appraisal (PRA) methods applied by Hand in Hand practitioners ensure local ownership and problem framing at the grassroots level.
- Empowerment – Hand in Hand believes in empowering the individual in order for her to help herself, take decisions, and make changes.
- Sustainability – The long-term social, economic, and environmental sustainability is the most important aspect when assessing new projects and when evaluating existing ones.
- Strengthening of existing structures – Hand in Hand does not believe in building parallel structures, but rather in working in close cooperation with and strengthening systems and structures already set in place by government authorities and civil society.

At present, 1,100 fulltime employees and 3,000 volunteers are engaged in our work, many of whom come from the communities in which we work. The management team consists of professionals with experience in education, microfinance, Self Help Groups, natural resource management, pro-poor governance, water management, building primary, secondary, and tertiary community organisations to promote self-reliance, and research and training. The Managing Trustee and the Board of Trustees are jointly responsible for the initiation and implementation of the projects.

Hand in Hand is currently active in 13 districts in the Indian state of Tamil Nadu as well as in Pondicherry.

Location

SWM projects will be implemented in one village in Kancheepuram District, Tamil Nadu, India. The village will have an average population of 5,000 people, or approximately 1,000 households.

Infrastructure

A piece of land in the outskirts of the residential areas will be donated from the panchayat and the site infrastructure will be constructed. The land will be cleared of potential trees, the ground will be flattened, water and power connection will be arranged, a fence will be build, and etcetera. A compost shed, a material shed, and an office will be constructed on the site.

The panchayat will be supplied with the necessary tools and equipment, e.g. aluminium basins, bins, long handled picas, sieves, first-aid kits, and toolboxes. Each household will be given two plastic segregation buckets free of charge.

In order to collect the waste from the households and thereafter transport it to the site, the project will have pushcarts, rickshaws, and auto-rickshaws at their disposal.

Employees

The management team at Hand in Hand will be responsible for the overall planning and organising of the project during the first 24 months. A core team consisting of one Team Leader, one Technical Coordinator, and one Office Administrator, will be hired to execute the project.

Each panchayat will have two Supervisors – one in the field and one at the site – one Driver, ten Street Beautifiers, and two Site Workers.

Employees:

- Two Supervisors
- One Driver
- Ten Street Beautifiers
- Two Site Workers

Activities

Training

All employees will undergo extensive training in SWM, including the linkage between a deteriorating environment, waste, and human health, the treatment and management of waste, principles behind composting and recycling, occupational hazards, health and hygiene, collection and transportation procedures, and etcetera.

Once the land has been acquired and the facilities have been set up, the project will consist of the following activities in broad outline:

- Segregation of waste at source
- Primary collection
- Composting of biodegradable waste
- Recycling of non-biodegradable waste
- Awareness and information campaigns

Segregation of Waste at Source

The households will segregate the waste at source into biodegradable (wet) waste and non-biodegradable (dry) waste. The non-biodegradable (dry) waste will thereafter be segregated into recyclables, non-recyclables, and domestic hazardous waste. Each household will be provided two buckets in different colours free of charge for the wet and the dry waste respectively.

Collection

Door-to-door collection of waste will take place on a daily basis on either pushcarts or rickshaws. After the waste has been collected from the households and the common areas have been swept, the waste is transported to the site with auto rickshaws.

Composting of Biodegradable Waste

At the site, all biodegradable waste will be composted either in aerobic composts or in the more costly vermi-composts. Aerobic composting refers to a process where biodegradable waste is biologically decomposed under controlled conditions by microorganisms (mainly bacteria and fungi) under aerobic conditions. The product, compost, can effectively be utilised as an organic fertiliser to rejuvenate soils. A key risk associated with composting relates to the product; i.e. compost that is free from environmental hazards. If composting is not based on segregation at source, the product risks becoming contaminated.[19] Com-

[19] *Management of Solid Waste in Indian Cities*.

posting is a low-cost option, which can be implemented on different levels of scale, thus adapted to a city's specific context.

Vermi-composting is based on the digestion of waste by earthworms. A pre-composting phase is necessary where waste is left to decompose partially and thereafter fed to the worms. The worm casting is harvested as vermi-compost. Currently in India, compost sells at rates between INR 1.60-3.00 per kilo for ordinary compost and INR 5.00-10.00 per kilo for vermi-compost.

Recycling of Non-Biodegradable Waste

The non-biodegradable waste will be segregated by category at the site. The recyclable waste will then be sold to companies that have machinery and expertise to recycle the material properly.

Awareness and Information Campaigns

An important step to motivate and engage the public is via continuous public awareness campaigns based on a public IEC strategy. Activities will, for instance, include promotion of the RRR-slogan – reduce, reuse, and recycle – advertisement on publicity boards, on local radio channels, and in local newspapers, as well as workshops, exhibitions, lectures, street plays, and etcetera. In addition, eco-clubs at schools and youth groups together with volunteers will be encouraged to take an active part in the project. Some of the themes to be discussed during public awareness and motivation campaigns are as follows:

- Consumption patterns and a sustainable development;
- The natural source of products;
- Recycling and reuse;
- Littering and indiscriminate dumping of refuse on open spaces, footpaths, lanes, streets, and into drainage channels or water bodies;
- Environmental degradation and its effects on human health.

The project also implies that certain steps be taken by the public. In order to get full participation, special information campaigns will target the following areas:

- Inform the public on how to segregate waste at source into biodegradable (wet) waste and non-biodegradable (dry) waste. The non-biodegradable (dry) waste shall thereafter be segregated into recyclables, non-recyclables, and domestic hazardous waste;
- Inform the public about the two buckets (free of charge) in different colours for the wet and the dry waste respectively;
- Inform the public about the daily door-to-door waste collection and handing over of the waste to the Street Beautifiers;
- Inform the public about communal bins for biodegradable waste in buildings, institutions, companies, and residential colonies;

- Inform the public about collection of the monthly household fee of INR 15-25;
- Encourage the utilisation of compost for farming and gardening. Increase the public's awareness and knowledge about compost use and benefits in order to increase market demand.

For a detailed time schedule of the different activities and phases, please see *Appendix 1: Time Schedule*.

7. BUDGET AND FINANCING

Financers

We propose that the donor contributes with 100 percent of the direct project costs during the first 24 months. Hand in Hand will contribute with management and administrative costs. After 24 months, the project will be financed by the panchayat as well as by the community waste fund.

Community Waste Fund

A so-called community waste fund will be set up where the household fees (INR 15-25 per household per month) will be amassed. After the initial 24 months, the fund will be used to meet project expenses.

For detailed annual and total budgets, please see *Appendix 2: Budget*.

8. SUSTAINABLE DEVELOPMENT

Hand-Over Phase

During the last six months of the project being under the management of Hand in Hand, it will be handed over to the panchayat. The six-month hand-over phase will include sensitizing the panchayat to the various aspects of SWM. Thereafter, extensive technical training will be given in order for the panchayat to gain sufficient expertise. In addition, managerial and organisational training will be given to the panchayat.

Ownership

After the initial two-year period, the panchayat will be the formal owner of the infrastructure, as well as act as the employer of the staff.

Technology

Decentralised SWM systems use simple, cost effective, and labour intensive machinery and technology. As far as possible, we will use machines that are run manually and not dependent on an assured power supply.

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